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Published in:
The Palgrave Handbook of Arctic Policy and Politics

DOI:
10.1007/978-3-030-20557-7

Published: 01.01.2019

Document Version
Peer reviewed version

Citation for pulished version (APA):
Koivurova, T., Kleemola-Juntunen, P., & Kirchner, S. (2019). Emergence of a New Ocean: How to React to the Massive Change? In K. S. Coates, & C. Holroyd (Eds.), *The Palgrave Handbook of Arctic Policy and Politics* (pp. 409-425). Palgrave Macmillan. https://doi.org/10.1007/978-3-030-20557-7

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Download date: 04. May. 2023

Emergence of a new Ocean – how to react to the massive change?

Timo Koivurova, Pirjo Kleemola-Juntunen, Stefan Kirchner

1. Introduction

Before the states commenced negotiating what became the 1982 UN Convention on the Law of the Sea (UNCLOS), there was not much discussion of how laws of the sea applied in the Arctic Ocean, given that the normal uses of the sea could not be practiced there (but cf. Kiikert/Lackenbauer, 2014). From the beginning of the 20th Century, there had been academic discussion as to whether the Arctic Ocean sea-ice cover could be claimed as land (ice-is-land theory) or via sectoral claims (similar to those that took place in the other Pole, Antarctica). Yet, as *Erik Franckx* has shown, most active in this respect were scholars, not the states and their civil servants (this discussion took place in particular in Canada and the Soviet Union, given that it is these two states which have the longest coastlines to the Arctic Ocean, see Franckx, 1993).

Even if UNCLOS did address the Arctic Ocean with one article (Article 234), it is fair to say that there was limited discussion over what rules govern the very limited uses of the Arctic Ocean and adjacent seas (UNCLOS III, 1982: 41-43). This was due to the fact that it was largely an ice-barren Ocean, where only limited amount of human activities took place, which were dependent on a delicate ecological balance.

All this is now changing, and with accelerating pace. Climate change has progressed more intensely in the Arctic, which has caused and is causing concrete and dramatic impacts on the extent and breadth of the sea ice. The Arctic Ocean has already lost approximately 40-50% of its sea ice volume in about 40 years. The first ice-free summer season is projected to occur sometime between 2030 and 2040 (Onarheim et al., 2018). Today, we are literally witnessing a full-scale transformation of the Arctic marine areas, their ecosystems and the amount of human activity

taking place in these marine areas. It is hence no wonder that there is ever more discussion on how UNCLOS and various maritime treaties apply in the Arctic waters and how they should be adjusted to accommodate the unique Arctic maritime conditions.

In this article, we will refer to the Arctic Ocean and the associated seas as the Arctic marine areas. We will adopt the widely used definition that is used by the Arctic Monitoring and Assessment Programme (AMAP) – one of the working-groups of the Arctic Council. It uses the working definition of marine areas north of the Arctic Circle (66°32'N), and north of 62°N in Asia and 60°N in North America (as modified to include the marine areas north of the Aleutian chain, Hudson Bay and parts of the North Atlantic Ocean, including the Labrador Sea). It also seems widely accepted that there are only five coastal states to the Arctic Ocean, namely, Canada, Denmark (through Greenland), Norway, the Russian Federation and the United States.[1]

Before examining how the Arctic marine areas are currently regulated, it is important to examine who is legally competent to regulate the uses of the Oceans and where such competences apply. With this background, it is possible to study how the Arctic states have countered the vast challenges posed by climate change and other drivers behind the emergence of what is, for many purposes, a new Ocean. Finally, before drawing conclusions, we will also examine how to address some of the more difficult issues that are emerging in this melting Ocean and adjacent seas.

2. Maritime zones in the Arctic – which policy entity is competent and where?

From World War II onwards, coastal states have gradually asserted more powers over their adjacent sea-areas. This phenomenon, referred to as "creeping jurisdiction" (Ball, 1996), has taken place all over the Planet, including the Arctic marine

[1] Even though Iceland has occasionally tried to contest this.

areas. Because of this growth in claims to jurisdiction, coastal states gained an increasing amount of rights over the coastal areas near their land. Most notably, the territorial sea has expanded from a long-established customary law maximum of three nautical miles to the current maximum (under both customary international law and Article 3 UNCLOS) of twelve nautical miles, and new maritime zones have gradually become accepted, including exclusive economic zones (EEZ) and the continental shelf. In addition, many coastal states have taken liberal use of the straight baselines method to separate their internal waters and territorial sea (Haake, 2016). This means that larger marine areas are within the full sovereignty of coastal states as internal waters, where other state´s vessels do not enjoy innocent passage rights as they do in the territorial sea. Since maritime zones are measured from these straight baselines,[2] the outer limits of the territorial sea, EEZ and in some cases the continental shelf are pushed further out to the sea. Since the sovereignty and sovereign rights of coastal states have grown larger, these zones overlap more and more between neighboring states and hence there has been a need to resolve maritime boundary disputes. It has also meant that there is less space for the high seas and the deep seabed, both of which are areas beyond national jurisdiction. This development highlights the gains of the coastal states in the second half of the 20th century, in particular through UNCLOS.

All this has taken place also in the Arctic marine areas. The Arctic coastal states have enlarged their maritime zones, claiming larger territorial seas and exclusive economic zones, as well as continental shelves, in line with the aforementioned development of customary and codified law of the sea, with the result that neighboring state's now claim overlapping maritime zones (Economist, 2014). Gradually, one by one, Arctic marine states resolved these boundaries via treaties, sometimes with the help of arbitration, conciliation or even the International Court of Justice. Most boundaries have, however, simply been negotiated amicably between the Arctic states, such as the long maritime boundary between Norway and Russia in the Barents Sea. Canada and the United States, however, have had difficulties in negotiating their maritime boundary in the Beaufort Sea (Byers, 2014:56-92).

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[2] UNCLOS recognizes four types of baselines for drawing maritime zones: straight, normal, archipelagic, and closing lines across river mouths and bays, see Articles 3, 33, 47, 57, and 76.

Coastal state proposals to extend continental shelf limits have exposed new areas of overlapping territory that will require negotiation or litigation to delimit boundaries. This will likely be a long process, as the Commission on the Limits of Continental Shelf (CLCS) still needs to make recommendations to many Arctic Ocean littoral states and thereafter the states themselves are the only competent ones to negotiate the boundary between them. Since, for instance, Canada is yet to make its submission to the CLCS as regards the Central Arctic Ocean, we can expect that the process will take a long time, as the CLCS has a long queue of submissions to process. Already in the 2008 Ilulissat Declaration, the Arctic Ocean coastal states held that:

> "By virtue of their sovereignty, sovereign rights and jurisdiction in large areas of the Arctic Ocean the five coastal states are in a unique position to address these possibilities and challenges. In this regard, we recall that an extensive international legal framework applies to the Arctic Ocean as discussed between our representatives at the meeting in Oslo on 15 and 16 October 2007 at the level of senior officials. **Notably, the law of the sea provides for important rights and obligations concerning the delineation of the outer limits of the continental shelf**, the protection of the marine environment, including ice-covered areas, freedom of navigation, marine scientific research, and other uses of the sea. We remain committed to this legal framework **and to the orderly settlement of any possible overlapping claims.**" (Ilulissat Declaration)[3]

So far, they have proceeded very co-operatively in addressing these possible overlapping continental shelf entitlements, though there remain differences regarding the legal status of the Lomonosov Ridge currently before the CLCS (Russian Federation, 2015).

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[3] Emphasis added.

As the Arctic marine states have advanced their maritime sovereign rights further, the areas for high seas and deep seabed have diminished. There is a 2.8 million square kilometer high seas area in the central Arctic Ocean, and smaller pockets of high seas in the Barents Sea, Bering Sea and Northeast Atlantic. In these areas, all the traditional high seas freedoms are, in principle, available for all vessels of the world. Presently, about 40% of these high seas areas are open waters during the summertime.[4] It is likely that there will remain only two pockets of deep seabed, part of the common heritage of humankind, in the Arctic Ocean after the coastal state's submissions to the CLCS are processed and the coastal states have negotiated the boundaries between each other. In addition, those remaining areas are likely located in places where it is technically difficult (and therefore most likely not yet profitable) to even explore minerals under the Part XI and the regulations of the International Seabed Authority (ISBA).

3. Regulatory environment

As is clear from the above, UNCLOS is a type of "constitution for the oceans" (Koh, 1982) and it is the cornerstone legal framework for regulating uses of Arctic marine areas. The United States, although not a party to UNCLOS, accepts most of the rules that have been codified within UNCLOS as amounting to norms of customary international law; it is therefore useful to refer to UNCLOS as the overarching framework.[5] There are also many other treaties that govern the uses of also the Arctic marine areas, including international environmental treaties and legally binding norms which have been created under the auspices of the International Maritime Organization (IMO).

3.1. United Nations Convention on the Law of the Sea and the Arctic

As mentioned above, there is only one article in the whole convention specifically tailored to take Arctic conditions into account, Article 234. Article 234, on ice-cov-

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[4] Data from National Snow and Ice Data Center, available at: https://nsidc.org/cryosphere/sotc/sea_ice.html.

[5] Yet, it is also correct to point out that the states used the term "law of the sea" in Ilulissat Declaration, simply because the United States is not a party to this Convention.

ered areas, was negotiated mainly between the two Cold War superpowers: the United States and Soviet Union, but also importantly with Canada. It was, in effect, Canada which catalyzed the development for negotiations on this article by enacting domestic legislation which contravened of the law of the sea since it enabled marine environmental protection measures to be adopted and enforced outside of the territorial sea (in the EEZ) against all vessels on a non-discriminatory basis (Arctic Waters Pollution Prevention Act 1970). Yet, Canada was able to convince the two superpowers to endorse Article 234 of UNCLOS, and since it became an article in UNCLOS, it also binds all contracting states to the UNCLOS, and its contents have, arguably, become a norm of customary international law. Article 234 reads as follows:

> **"Ice-covered areas**
> Coastal States have the right to adopt and enforce non-discriminatory laws and regulations for the prevention, reduction and control of marine pollution from vessels in ice-covered areas within the limits of the exclusive economic zone, where particularly severe climatic conditions and the presence of ice covering such areas for most of the year create obstructions or exceptional hazards to navigation, and pollution of the marine environment could cause major harm to or irreversible disturbance of the ecological balance. Such laws and regulations shall have due regard to navigation and the protection and preservation of the marine environment based on the best available scientific evidence." (Art. 234 UNCLOS)

This norm thus provides coastal states with legal powers to enact and enforce domestic legislation up until the limit of the exclusive economic zone to prevent, reduce and control marine pollution from vessels in ice-covered areas – competencies that coastal states would otherwise not have in their EEZs. Such laws need to be non-discriminatory and have due regard to navigational interests. While it is unclear if these powers will continue to apply if warming trends accelerate and the EEZ parts of the Arctic marine area are no longer covered by ice "most of the

year", it appears that states will continue applying Article 234 to their Arctic marine area regardless of the ice cover (Dremliuga, 2017).

Some scholars have also suggested that Arctic Ocean coastal states could make use of Articles 122 and 123 of UNCLOS, as for them the Arctic Ocean could qualify as a semi-enclosed sea and hence would entail, arguably, legal obligations for the coastal states (Scovazzi, 2009). According to Article 122:

> For the purposes of this Convention, 'enclosed or semi-enclosed sea' means a gulf, basin or sea surrounded by two or more States and connected to another sea or the ocean by a narrow outlet or consisting entirely or primarily of the territorial seas and exclusive economic zones of two or more coastal States.

This provision identifies two types of sea areas to be within its scope: either those that are covered primarily by territorial seas and EEZs of coastal States or those that are connected to other sea areas only by a narrow strait. Since the terms used in Article 122 are vague, it is difficult to provide a clear-cut answer as to whether the Arctic Ocean is an enclosed or semi-enclosed sea in the meaning of Article 122. As regards the first type of sea area, it is important to note that a large part of the Arctic Ocean consists of high seas and thereby would not convincingly satisfy the requirement of 'primarily'. As regards the second type of sea area, in comparison to the seas that are clearly enclosed or semi-enclosed – such as the Baltic or Mediterranean Seas – the Arctic Ocean opens relatively broadly to the North-East Atlantic.

If the Arctic Ocean could be considered a semi-enclosed sea based on Article 122, the coastal states would be under the obligations laid down in Article 123:

> "States bordering an enclosed or semi-enclosed sea should cooperate with each other in the exercise of their rights and in the performance of their duties under this Convention. To this end they shall endeavour, directly or through an appropriate regional organization: (a) to coordi-

> nate the management, conservation, exploration and exploitation of the living resources of the sea; (b) to coordinate the implementation of their rights and duties with respect to the protection and preservation of the marine environment; (c) to coordinate their scientific research policies and undertake where appropriate joint programmes of scientific research in the area; (d) to invite, as appropriate, other interested States or international organizations to cooperate with them in furtherance of the provisions of this article." (Art. 123 UNCLOS)

According to the phrasing of this provision, it seems more adequate to interpret Article 123 as encouraging regional sea cooperation over marine environmental protection, management of living resources and marine scientific research rather than imposing on coastal States a legally binding obligation to do so. In international treaty practice, 'should' is normally used to denote non-legally binding guidance rather than a legal obligation (for which 'shall' or 'must' are used). Moreover, the use of 'shall' in the second sentence is significantly qualified by the term 'endeavour'. It seems, hence, a better argument that Article 123 merely contains a weak obligation to cooperate, but it does urge the coastal States – perhaps together with other States and international organizations – to engage in regional cooperation over the policy areas enumerated in the provision.

If the coastal States were to regard the Arctic Ocean as an enclosed or semi-enclosed sea in the meaning of Article 122, and if they were to be prepared to commence negotiations over how to implement cooperation in the fields mentioned in Article 123, they would also need to define the relationship between this initiative and the Arctic Council, given that the Council's work so far also extends to marine environmental protection and scientific research in the Arctic Ocean. Yet so far they have not invoked Articles 122 and 123 as the basis of their marine co-operation. Not even the Ilulissat Declaration, which identified possible areas of co-operation between the five Arctic Ocean coastal states, referred to these provisions.

3.2. New regulatory measures to regulate the Arctic marine environment

Arctic states have responded to the dramatically changing marine area in a variety of ways. First, they have taken regulatory action under the Arctic Council, the predominant inter-governmental forum dedicated to environmental protection and sustainability in the Arctic marine area. The Council has used both soft and hard-law measures to advance marine governance of Arctic waters. Second, Arctic states have acted on a sectoral basis outside the Council to introduce stricter shipping and fisheries regulations.

3.2.1. Ocean-related efforts of the Arctic Council

The Arctic Council has had the marine agenda from the very beginning, first as the Arctic Environmental Protection Strategy (AEPS) of 1991, and then integrated with several other working groups into its current structure in 1996. The Protection of the Arctic Marine Environment (PAME) was a working group already during the AEPS and it continued its functioning under the umbrella of the Arctic Council as the main working group dedicated to the Arctic marine affairs. The Conservation of Arctic Flora and Fauna (CAFF), Emergency Prevention, Preparedness and Response (EPPR) and Arctic Monitoring and Assessment Program (AMAP) working groups have also conducted important maritime activities under the Arctic Council.

There is a vast amount of marine relevant policy activities undertaken in PAME - and in other working groups - over the years (Koivurova / Vanderzwaag, 2007). Examples of recent soft-law activities include the 2009 Arctic Marine Shipping Assessment (AMSA), which contained negotiated policy recommendations for shipping in the Arctic marine areas (AMSA 2007). The Arctic Offshore Oil and Gas Guidelines (AOOGG, 1997), adopted in 1997 and already revised twice, contain a non-binding set of suggested best practices for oil and gas extraction designed to advise industry officials and government regulators. PAME also has a long-standing strategy to work for ecosystem-based management and marine protected areas for the Arctic marine area, the most recent one adopted up until 2025 (AMSP, 2015). Some additional activities will be studied below.

3.2.1.1. Treaties Negotiated through Arctic Council Task-Forces

The Arctic Council has also recently recognized three legally binding agreements that are independent of the Arctic Council but negotiated through Arctic Council task-forces: the Arctic Search and Rescue Agreement, the Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic and the Agreement on Enhancing International Arctic Scientific Cooperation. Each agreement will be discussed below.

At the Arctic Council Ministerial Meeting in Nuuk on 12 May 2011, the eight Arctic countries concluded the Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic (Arctic SAR Agreement / Arctic SAR, 2011). The Agreement is the first legally binding treaty relating particularly to the Arctic negotiated under the auspices the Arctic Council. The objective of the Agreement is to strengthen aeronautical and maritime search and rescue cooperation and coordination in the Arctic (Art. 2 Arctic SAR 2011). The Arctic SAR Agreement contains twenty Articles, an Annex delimiting the area of each State's search and rescue jurisdiction and three Appendices, which define competent authorities, search and rescue agencies, and rescue coordination centers of each Party. The agreement provides delimitation of the air and, in particular, sea rescue regions between the parties up to the North Pole. Thereby, the Arctic SAR Agreement covers the whole Arctic Ocean and many other sub-Arctic marine areas including the Bering Sea, Irminger Sea and Labrador Sea. Finland, Norway, Russia and Sweden apply the agreement in the regions north from the Arctic Circle. The agreement contains provisions on the competent authorities, as well as arrangements for cooperation regarding alerting, the conduct of operations and the exchange of information. The authorities responsible for air and sea rescue operations with their powers and existing resources ensure the fulfillment of the obligations of the parties to the agreement.

The Arctic SAR Agreement is mainly based on previous international agreements, takes into account established practices and is applied in compliance with the international aeronautical and maritime search and rescue manual. The existing in-

ternational conventions to which the Agreement refers to are the 1979 International Convention on Maritime Search and Rescue (SAR Convention, 1979) and the 1944 Convention on International Civil Aviation (Chicago Convention, 1944). The Agreement relies on these Conventions for terms and definitions as well as the scope and the enunciated measures. The provisions of the Agreement are in line with the provisions and obligations of these two broader universal Conventions, and exceed them by detailing how the parties carry out their SAR Convention co-operation obligations regarding sharing information and experience and the carrying out of joint research and training activities (Arts. 9 and 10 Arctic SAR 2011).
The Agreement also implements the obligations set out in Art. 98 (2) UNCLOS, which provides that, where needed, neighboring states shall cooperate through regional agreements to promote and maintain adequate and effective search and rescue services. While the Agreement does not establish its own institutional arrangements like a Secretariat, Committees, or Working Groups, the parties will meet regularly "in order to consider and resolve issues concerning practical cooperation." (Art. 10 Arctic SAR 2011) To accomplish this, the EPPR established a SAR Expert Group to facilitate the exchange of best practices.

The second treaty negotiated under the auspices the Arctic Council is the Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic (MOPPRA, 2013) signed at the Kiruna Ministerial Meeting in May 2013. The objective of the Agreement is "to strengthen cooperation, coordination, and mutual assistance among the Parties on oil pollution preparedness and response in the Arctic in order to protect the marine environment from pollution by oil" and in doing so to increase collective capacity in spill response operations (Tanaka, 2015:322).

The Agreement builds on the 1990 International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC, 1990) to which the Eight Arctic States are all parties, and applies the general principle of "polluter pays" (Sands et al., 2018:642). MOPPRA treaty provisions are in line with the content and wording of the OPRC. The added value of MOPPRA is that within its framework, the parties will create a narrower network of Arctic operators for OPRC cooperation. There was previously no legally binding, specific multilateral marine oil pollution

response instrument for the Arctic, where spills of any significant magnitude may exceed any one Arctic State's ability to address it alone (Byers, 2014:212-213). The Agreement includes demarcation lines, requirements for monitoring, cooperation and exchange of information, joint exercises and training, joint reviews of any oil pollution incident response and for reimbursement for the costs of providing assistance in certain circumstances (Arts. 7-13 MOPPRA, 2013). The parties also agreed to meet on a regular basis to review MOPPRA's practical implementation (Art. 14 MOPPRA, 2013).

In addition, some states in the region are parties to the Agreement concerning Cooperation in Taking Measures against Pollution of the Sea by Oil or other Harmful Substances (Copenhagen Agreement) which went into effect in 1971 and was updated by a 1993 superseding agreement that came into effect in 1998 (Copenhagen Agreement, 1993). This agreement imposed monitoring, investigation, reporting, preparedness, assistance, information exchange and reimbursement obligations on the parties similar to what was later included in MOPPRA.

The third legally binding agreement negotiated through the framework of the Arctic Council is the Agreement on Enhancing International Arctic Scientific Cooperation signed on 11 May 2017 at the 10th Ministerial Meeting in Fairbanks, Alaska, and entered into force on 23 May 2018 (ASC, 2017). The agreement was negotiated among the eight Arctic States in consultation with six indigenous Permanent Participant organizations of the Arctic Council. The aim and purpose of the Agreement is to improve practical research collaboration, facilitating permitting procedures for the mobility of researchers, samples and research equipment across borders, as many areas of research require large infrastructures including extensive data sets and exploration vessels for which individual research institutions do not have the resources or capacity. The Agreement is of a general nature and does not prejudice the sovereignty and sovereign rights of the parties in their maritime zones granted by the LOSC relating to the access to research areas or alter the rights and obligations of any party under the Part XIII of the LOSC. In addition to the framework provided by international law in general, the Agreement is to be implemented in

accordance with applicable national laws, regulations, procedures and policies of the parties concerned (Art. 10 ASC, 2017).

3.2.1.2. Scientific Research catalyzed by Arctic Council Task-Forces

In addition to the normative legal activities catalyzed by the Arctic Council's working groups, they have also instigated scientific reporting about environmental problems in the Arctic marine areas. For instance, the 2013 Arctic Biodiversity Assessment (ABA) gave an alarm on the threats to the Arctic marine ecosystems and biodiversity: 'There is increasing concern that the global demand for seafood outside the Arctic combined with increasing accessibility of Arctic seas as a result of sea ice loss creates the potential for increased risks to poorly known fish and crustacean stocks' (CAFF, 2013:14). In general, 'habitat loss and degradation pose the main threats to biodiversity. The relative well-being of many Arctic ecosystems today is largely the fortuitous result of a lack of intensive human encroachment,' which are now being affected by increasing human activities (CAFF, 2013: 8). ABA also states that climate change is "by far the most serious threat to biodiversity and exacerbates all other threats" in the Arctic, and in particular the marine Arctic (CAFF, 2013:9). Of key concern is the rapid loss of multi-year ice in the central Arctic basins and changes in sea ice dynamics on the extensive Arctic shelves, which affect the biodiversity and productivity of marine ecosystems. Additionally, The AMAP Working Group adopted the Arctic Ocean Acidification Overview Report in 2013. It found that the Arctic Ocean is rapidly accumulating carbon dioxide (CO_2) leading to increased ocean acidification – a long-term decline in seawater pH (AMAP, 2014:xi and 27). This ongoing change impacts Arctic marine ecosystems which are already affected by rising temperatures and melting sea ice. Warmer temperatures also increases the threat of mid-latitude invasive species and pollutants arriving in Arctic marine ecosystems.

3.2.2. Sectoral regulations for the marine Arctic

While a specific international treaty for the Arctic has long been debated, the sovereignty of Arctic nations and the very different situation in the Arctic prevents an overarching Arctic-specific treaty that would parallel the Antarctic Treaty. The Arctic Ocean is already regulated under the international law of the sea and almost all Arctic marine coastal states are parties to UNCLOS. Like other regional seas, however, the Arctic Ocean has become the object of more detailed geographically-specific norm-making in the context of the international law of the sea — but outside the Arctic Council. The two most important developments in this regard are the entry into force of the Polar Code on 1 January 2017 and the adoption of a fisheries agreement in December 2017.

3.2.2.1 The Polar Code

After substantial discussions at the International Maritime Organization (IMO), in the frameworks of the International Convention for the Safety of Life at Sea (SOLAS) and the International Convention for the Prevention of Pollution from Ships (MARPOL), the Polar Code provides legally binding standards concerning ships that operate in polar waters, i.e., both in the Arctic and Southern Oceans (Polar Code, 2017). The aim of the Polar Code is to protect human life and the natural environment of polar waters. This goal is pursued through the establishment not only of binding technical standards but also of requirements regarding vessel manning, seafarer training and voyage planning.

The entry into force of the Polar Code, which followed years of debate, was timely as there is currently a boom in Arctic cruise shipping. This boom, which gained widespread public attention with the journey of the *Crystal Serenity* through the Northwest Passage, appears to be continuing unabated.[6] In light of the very limited search and rescue infrastructure available in the Arctic, a focus on disaster prevention and human safety remains essential for the foreseeable future. Since there is also minimal infrastructure for waste reception in polar regions, the Polar Code also imposes tighter restrictions for discharging food and gray water (Polar Code,

[6] All remaining 2018 journeys through the Northwest Passage with Polar Cruises are either full or with limited availability, see: https://www.polarcruises.com/arctic/destinations/northwest-passage.

2017: Chapter 5). Protecting the Arctic marine areas from accidental environmental damage is also matter of increasing concern (see Overby, 2014:358). Earlier disasters, such as the oil spill caused by the *Exxon Valdez* or the loss of the *Selendang Ayu*, are reminders that the Arctic, even outside the Central Arctic Ocean, continues to provide a challenging work environment for the oil and shipping industries. Melting sea ice does not mean a complete absence of sea ice in Arctic shipping lanes. Bergy water constitutes a serious risk for vessels, for example through damage sustained by screws or rudders. Indeed, in some areas, climate change already increases the risk posed by icebergs: an increase in Arctic temperatures leads to larger icebergs calving off glaciers in the high north. These larger icebergs take longer melt, making it more likely that they will float further south and pose a threat to vessels in shipping lanes in the North Atlantic (a geographic area not covered by the Polar Code). Likewise, the Polar Code does not apply to fishing vessels, although incidents like that of the *Antarctic Chieftain* in 2015 are a reminder that emergencies suffered by fishing vessels in polar waters also have the potential to cause harm to human safety as well as the environment. Efforts are also underway by the International Maritime Organization (IMO) to limit the use of heavy ship fuels in Arctic waters, in addition to the sulphur content limits applicable to ship fuels globally starting 1 January 2020.

3.2.2.2 The Central Arctic Ocean Fisheries Agreement

Large parts of the Arctic Ocean fall within either the sovereign territorial seas of the coastal states Russia, Norway, Denmark (with regard to Greenland), Canada and the United States or are subject to sovereign rights, for example in EEZs. The central part of the Arctic Ocean, which is bordered by the waters of these states, is high seas. Therefore, vessels from all flag states are permitted to engage in the classical freedoms of the High Seas there, including fishing. At this time, very little is known about the abundance (or lack thereof) of living resources in the central Arctic marine area. In 2004, the Arctic Council's Climate Impact Assessment predicted that fish stocks would move poleward due to rising ocean temperatures. This has been the case in recent years with the northward movement of mackerel into Iceland's EEZ (see Seafish, 2013). As multi-year sea ice melts also in the cen-

tral parts of the Arctic Ocean, this part of the Arctic is quickly becoming more accessible, also for fishing. Currently, about 40% of the Arctic Ocean is already ice-free during the summer months and it is expected that the entire ocean will be practically ice free in the summer months at some time between 2030 and 2040. Elsewhere, a lack of information about fish stocks led to delays in the adoption of measures which might have prevented overfishing (see Balton, 2001). In the High Seas, the responsibility for regulating vessel behavior rests with the flag states. The aforementioned coastal states, also known as the Arctic Five (A5), joined by other actors with interests in the region (Iceland, Japan, South Korea, China and the European Union, together referred to as the A5+5), came together to establish an international agreement which prevents ships flying their flags from commercial fishing in the Central Arctic Ocean. The agreement, which follows the 2015 Declaration Concerning the Prevention of Unregulated High Seas Fishing in the Central Arctic Ocean which had been adopted by the A5, allows flag states to permit ships flying their flags to engage in fishing for exploratory purposes (Art. 3 (3) CAOFA, 2017) or if there is a regional fisheries management organization which has adopted rules for the High Seas part of the Central Arctic Ocean (Art. 3 (1) (a) CAOFA, 2017). This makes it clear that the agreement is not aimed at preventing fishing per se but is a temporary measure designed to prevent harm to the marine environment at a time when the region becomes accessible but vital information on fish stocks is still missing. The agreement will make fisheries management possible in a part of the seas that has never before been accessible for fishing by establishing a Joint Program of Scientific Monitoring to study the possibility of sustainable harvesting. The Central Arctic Ocean Fisheries Agreement is a rare example of international law-making for the maritime sector at a time when a problem is foreseeable but before anyone has conducted fishing in those waters (by contrast, many maritime safety rules have been established in reaction to major disasters).

4. How to assess the current regulation for the marine areas and improve it for the future?

It seems obvious that the Arctic states and other stakeholders are reacting quickly to the vast changes that are taking place in the Arctic marine areas – the transfor-

mation that the ecosystems are undergoing and the increasing human uses of these waters. The Arctic Council, a soft-law forum, catalyzed scientific assessments and legally binding agreements between the eight Arctic states on issues that are of crucial importance for the safety and security of seafaring and the marine environment. Search and rescue and oil spill agreements apply mostly to the marine areas of the Arctic and address issues of utmost relevance in remote maritime areas which do not have the personnel or equipment for large-scale marine emergencies.

In addition, even with no commercial fishing in the central Arctic Ocean and fairly limited vessel traffic, it was possible to push two important legally binding agreements, one through the IMO and one endorsed by the Arctic Ocean coastal states together with other invited states and the European Union. This shows that Arctic and other interested states and stakeholders are taking a proactive and precautionary approach toward regulating the Arctic marine areas.

The current regulatory measures, even if tailored to the Arctic (and Antarctic), have been based on existing global treaties. The Arctic Council-catalyzed legally binding agreements on search and rescue and oil spills draw on a range of international treaties, such as the International Convention on Maritime Search and Rescue (SAR Convention, 1979), the Convention on International Civil Aviation (Chicago Convention, 1944), the International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC, 1990), the Copenhagen Agreement concerning Cooperation in taking Measures against Pollution of the Sea by Oil or Other Harmful Substances (Copenhagen Agreement, 1993) and the International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties (Intervention Convention, 1969), but also on non-binding texts such as the

International Aeronautical and Maritime Search and Rescue Manual (IAMSAR Manual, 2007) and on recognized concepts like polluter responsibility.[7]

Even if the Arctic fisheries agreement was initiated by the Arctic Ocean coastal states, it is also correct to observe that it relies heavily on the straddling stocks convention (FSA, 1995), one of the global implementing treaties of UNCLOS. The Polar Code was made mandatory by amending the existing global IMO treaties, simply because shipping is a global activity and needs to be regulated primarily via global rules. When the negotiations start between states on how to manage biodiversity beyond areas of national jurisdiction, these will be conducted under the UN auspices, with the goal as a global implementing agreement to the UNCLOS. This global treaty would also apply in the 2.8 million square kilometer high seas area of the central Arctic Ocean ( ).

There are pros and cons to the current regulatory framework. It is significant that nation-states, the EU and other key stakeholders have been able to regulate activities before there are vested economic interests or major disasters in most of the Arctic marine areas. On the other hand, the downside of the current regulatory approach is that it has been advanced by states and other stakeholders via various routes (Arctic Council, Arctic 5 plus 5 and through IMO) via soft and hard-law measures and in particular on the basis of sectoral approach to regulation rather than a holistic ecosystem approach to marine management.

4.1. How to improve the fragmented landscape in Arctic Ocean governance

What is it possible to do to improve this fragmented landscape of governance of Arctic marine areas? The way forward has already started with the Arctic Council, in particular the PAME working group but also activities in the other working groups and task forces. PAME has identified 18 large marine ecosystems of the Arctic ma-

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[7] This follows from the preambles of the Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic, https://oaarchive.arctic-council.org/bitstream/handle/11374/531/EDOCS-1910-v1-ACMMDK07_Nuuk_2011_Arctic_SAR_Agreement_unsigned_EN.PDF?sequence=8&isAllowed=y, and of the Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic, https://oaarchive.arctic-council.org/bitstream/handle/11374/529/EDOCS-2067-v1-ACMMSE08_KIRUNA_2013_agreement_on_oil_pollution_preparedness_and_response__in_the_arctic_formatted.PDF?sequence=5&isAllowed=y.

rine areas that serve as basis for pushing forward marine ecosystem-based governance via soft-law measures.

The current measures include PAME's adoption of an Arctic Marine Strategic Plan that guides their efforts until 2025 and encourages Arctic states and other Arctic Council actors to take concrete measures towards ecosystem-based management. Until 2013, there was a separate expert group of the Arctic Council focusing on ecosystem-based management.[8] During the United States chairmanship, one of the main themes was to draw inspiration from the regional seas agreements and other arrangements for the work in the Arctic Ocean. Currently, Finland is leading this work with the task of examining whether more integrated ocean management will be possible.

5. Concluding thoughts

In the bigger picture, it is surprising that the Arctic states and other stakeholders have been able to react to the vast transformation of the marine environment so quickly. Many of the current regulatory measures have progressed during a time when relations between Arctic states are not at their best. In addition, leaders of two of these superpowers are openly questioning the value of measures to combat climate change, which are at the core of the regulatory work in the Arctic. Despite this, various soft and hard-regulatory measures have already occurred before extensive human economic activity has entered many of these marine areas. The Arctic Council has been able to catalyze legally binding agreements tackling marine emergencies and has advanced via soft-law measures some marine ecosystem-based management and scientific research in the Arctic Ocean and adjacent seas.

From this perspective, quite a lot has occurred considering the current geopolitical dynamics in the Arctic and elsewhere. Yet, climate change is unfortunately moving forward and transforming the Arctic marine area at an accelerating pace. The soft-

[8] Before this, there was a joint project between the Council working groups Sustainable Development Working Group (SDWG) and Protection of the Arctic Marine Environment (PAME) on the project Best Practices in Ecosystem-Based Ocean Management in the Arctic (BePOMAr), which was completed by 2009.

law measures toward Arctic marine ecosystem-based management introduced by the Arctic Council are a good start and will hopefully lead the international community and Arctic marine states to take more concrete steps in this direction.

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